

## PENT COOPERATION TRE

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

Date of mailing: <b>14 December 2000 (14.12.00)</b>	To:  Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE  in its capacity as elected Office
International application No.: <b>PCT/GB00/00935</b>	Applicant's or agent's file reference: <b>K.SAMARAS 7-</b>
International filing date: <b>14 March 2000 (14.03.00)</b>	Priority date: <b>09 June 1999 (09.06.99)</b>
Applicant: <b>SAMARAS, Konstantinos et al</b>	

## 1. The designated Office is hereby notified of its election made:

in the demand filed with the International preliminary Examining Authority on:  
**25 September 2000 (25.09.00)**

in a notice effecting later election filed with the International Bureau on:  
**\_\_\_\_\_**

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer:  J. Zahra Telephone No.: (41-22) 338.83.38
---	---

## PARENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>K. SAMARAS 7-</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 00/00935</b>	International filing date (day/month/year) <b>14/03/2000</b>	(Earliest) Priority Date (day/month/year) <b>09/06/1999</b>
Applicant <b>LCENT TECHNOLOGIES INC.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of Invention is lacking (see Box II).

4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the abstract,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

25

None of the figures.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/00/00935

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H04B7/26 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H04B H04L H04Q H04J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>KLEIN A ET AL: "FRAMES multiple access mode 1-wideband TDMA with and without spreading"          WAVES OF THE YEAR 2000+ PIMRC. THE IEEE INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS. TECHNICAL PROGRAM, vol. 1, 1 January 1997 (1997-01-01), pages 37-41, XP002094062</p> <p>page 37, left-hand column, line 1-9          page 37, left-hand column, line 22,23          page 37, left-hand column, line 42 -page 38, left-hand column, line 20          page 39, left-hand column, line 46-53          page 39, right-hand column, line 1-57          figures 1,2</p> <p>-----</p> <p>-/-</p>	1-3,5

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the International filing date but later than the priority date claimed

"T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the International search

Date of mailing of the International search report

15 May 2000

25/05/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Dejonghe, O

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/00/00935

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	NIKULA E ET AL: "HIGH BIT RATE SERVICES FOR UMTS USING WIDEBAND TDMA CARRIERS" INTERNATIONAL CONFERENCE ON UNIVERSAL PERSONAL COMMUNICATIONS, 29 September 1996 (1996-09-29), pages 562-566, XP002071479 page 563, left-hand column, line 8-28 ---	1-3, 5
X	EP 0 841 763 A (NOKIA MOBILE PHONES LTD) 13 May 1998 (1998-05-13) abstract column 3, line 52 -column 4, line 24 column 6, line 38-51 column 7, line 3-23 figure 2A ---	1, 2
X	WO 92 17957 A (MOTOROLA INC) 15 October 1992 (1992-10-15) abstract page 5, line 19-28 page 7, line 8 -page 8, line 5 figures 2A, 2B, 2C ---	1, 2
X	GARG V K ET AL: "Third generation (3G) mobile communications systems" 1999 IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS (CAT. NO.99TH8366), 1999 IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS, JAIPUR, INDIA, 17-19 FEB. 1999, pages 39-43, XP002118042 1999, Piscataway, NJ, USA, IEEE, USA ISBN: 0-7803-4912-1 page 39, right-hand column, line 20-41 page 40, left-hand column, line 22-41 ---	1, 2
A	page 39, right-hand column, line 20-41 page 40, left-hand column, line 22-41 ---	3-6
X	EP 0 538 546 A (MOTOROLA INC) 28 April 1993 (1993-04-28) abstract column 5, line 6-38 figure 2 ---	1

**INTERNATIONAL SEARCH REPORT**

Informer: [REDACTED] patent family members

International Application No

PCT/ [REDACTED] 00/00935

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0841763	A 13-05-1998	FI 964308	A	26-04-1998
		BR 9705138	A	18-05-1999
		JP 10190621	A	21-07-1998
		US 6031827	A	29-02-2000
WO 9217957	A 15-10-1992	US 5295140	A	15-03-1994
		EP 0577747	A	12-01-1994
		HU 65532	A	28-06-1994
		JP 6506579	T	21-07-1994
EP 0538546	A 28-04-1993	WO 8706082	A	08-10-1987
		AU 5589086	A	20-10-1987
		DE 3689979	D	25-08-1994
		DE 3689979	T	26-01-1995
		EP 0261112	A	30-03-1988
		EP 0412583	A	13-02-1991

MC  
(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
14 December 2000 (14.12.2000)

PCT

(10) International Publication Number  
WO 00/76089 A1

(51) International Patent Classification<sup>7</sup>: H04B 7/26,  
H04L 12/56

Konstantinos [GR/GB]; 53 Montagu Street, Swindon  
SN2 2HL (GB). SAMUEL, Louis, Gwyn [GB/GB]; 82  
Standen Way, Abbey Meads, Swindon SN2 3YG (GB).  
WU, Jian, Jun [CN/GB]; 32 Marney Road, Swindon SN5  
6AW (GB). YAN, Ran-Hong [—/GB]; Hawthorns, Kings  
Lane, Faringdon SN7 7SS (GB).

(21) International Application Number: PCT/GB00/00935

(74) Agents: WILLIAMS, David, J. et al.; Lucent Technologies UK Limited, 5 Mornington Road, Woodford Green, Essex IG8 0TU (GB).

(22) International Filing Date: 14 March 2000 (14.03.2000)

(81) Designated States (national): AU, BR, CA, CN, ID, IN, JP, KR, US.

(25) Filing Language: English

(84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

(26) Publication Language: English

Published:  
— With international search report.

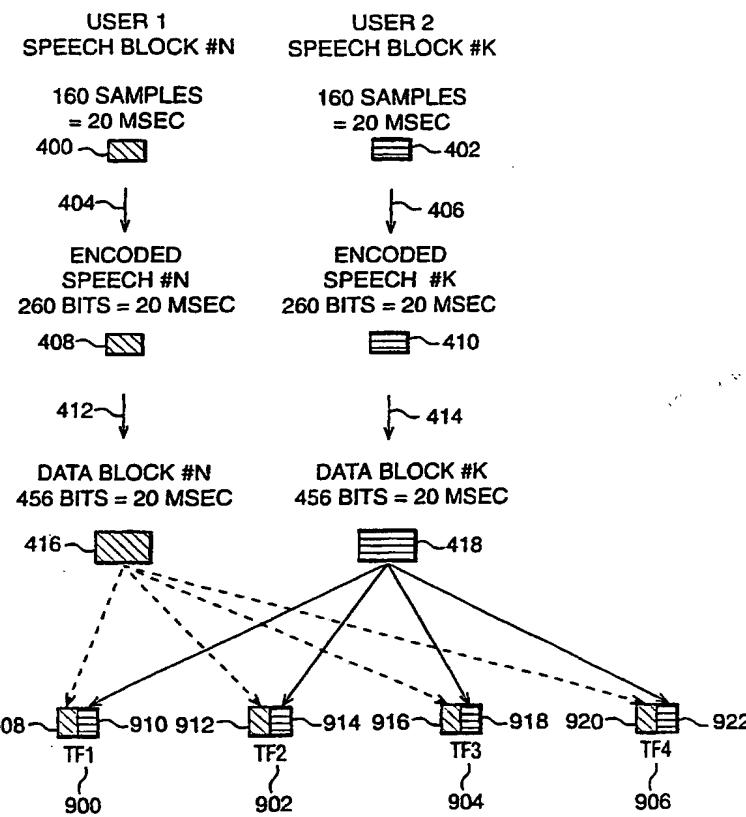
(30) Priority Data:  
99304486.6 9 June 1999 (09.06.1999) EP

(71) Applicant (for all designated States except US): LUCENT TECHNOLOGIES INC. [US/US]; 600 Mountain Avenue, Murray Hill, NJ 07974-0636 (US).

(72) Inventors; and  
(75) Inventors/Applicants (for US only): SAMARAS,

[Continued on next page]

(54) Title: TIME-SLOT PARTITIONING IN A TDMA SYSTEM



(57) Abstract: According to the present invention there is provided a method of transmitting user data in a TDMA system in which the number of channels is increased by partitioning at least one time-slot in a TDMA frame into at least two sub-time-slots. Each sub time-slot may be allocated to a different user. User data may be transmitted in each time slot in a burst structure, user data being transmitted in each sub time-slot in a corresponding burst structure. User data may be transmitted in each time slot in a burst structure having n bits and wherein each time slot is partitioned into m sub time slots, user data being transmitted in each sub time-slot in a corresponding burst structure having n/m bits.

WO 00/76089 A1



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

TENT COOPERATION TREATY

**PCT**

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

REC'D 25 SEP 2001

WIPO PCT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference  K.SAMARAS 7-5-7-19	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No.  PCT/GB00/00935	International filing date (day/month/year)  14/03/2000	Priority date (day/month/year)  09/06/1999
International Patent Classification (IPC) or national classification and IPC  H04B7/26		
<p><b>Applicant</b>  LUCENT TECHNOLOGIES INC.</p> <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		

Date of submission of the demand  25/09/2000	Date of completion of this report  21.09.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Fribert, J  Telephone No. +49 89 2399 8959



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00935

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*):

### Description, pages:

1,3-42 as originally filed

2 as received on 29/06/2001 with letter of 25/06/2001

### Claims, No.:

1-7 as received on 29/06/2001 with letter of 25/06/2001

### Drawings, sheets:

1/23-23/23 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/00935

the description,      pages:  
 the claims,      Nos.:      8-10  
 the drawings,      sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	3-7
	No:	Claims	1,2
Inventive step (IS)	Yes:	Claims	
	No:	Claims	3-7
Industrial applicability (IA)	Yes:	Claims	1-7
	No:	Claims	

**2. Citations and explanations  
see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00935

Reference is made to the following documents:

D1: KLEIN A ET AL: 'FRAMES multiple access mode 1-wideband TDMA with and without spreading'  
WAVES OF THE YEAR 2000+ PIMRC. THE IEEE INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS. TECHNICAL PROGRAM, vol. 1, 1 January 1997, pages 37-41

D2: GARG V K ET AL: 'Third generation (3G) mobile communications systems'  
1999 IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS, JAIPUR, INDIA, 17-19 FEB. 1999, pages 39-43, 1999, Piscataway, NJ, USA, IEEE, USA ISBN: 0-7803-4912-1

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Document D1, which is considered to represent the most relevant state of the art, discloses (cf. e.g. page 37, right hand column 3rd paragraph) a method of transmitting user data in bursts in time slots in TDMA frames, whereby at least one time-slot is partitioned into at least two sub-time-slots (e.g. 16 time slots divided into 64 time slots) such that data associated with different users is carried.

Thus, the subject-matter of claim 1 differs from that of D1 by the wording, that the time slot which is divided carries a single burst so that the data for different users is carried in the burst.

2. However, considering the transmission from e.g. a base station in a TDMA system like the one disclosed in D1 or in the present application, a burst cannot be defined very clearly, since the transmitter transmits all the time. Thus, a burst is generally defined as the signal transmitted in a slot for a particular user.

Due to the fact that D1 discloses the division of time slots into sub-time-slots carrying data for different users, the disclosure of D1 reads on to the subject-

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00935

matter of claim 1.

For this reason, the present application does not satisfy the criterion set forth in Article 33(2) PCT because the subject-matter of claim 1 lacks novelty.

3. Dependent claims 2 - 7 do not contain any steps which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step, the reasons being as follows:
  - (a) The subject-matter of claim 2 is known from D1 (cf. e.g. page 37, right hand column, second paragraph).
  - (b) According to D1 (cf. page 39, right hand column, 7th paragraph), the system supports packet switching. Due to this fact and the fact that the system disclosed in D1 is compatible with GSM, the person skilled in the art would inevitably consider the system disclosed in D1 for a system working according the EDGE standard, which was known at the date of priority of the present application (cf. e.g. D2, page 39, right hand column, paragraphs 3 and 4). Thus the subject-matter of claim 3 does not involve an inventive step).
  - (c) According to D1 (cf. page 39, right hand column) the RLC/MAC block comprise a part for each radio bearer. It is therefore obvious to the skilled person that each user should be allocated his proportional portion of the block and that signalling should take place in the time slot allocated to the user. Thus, the subject-matter of claim 4 is rendered obvious.
  - (d) The subject-matter of claim 5 is known from D1, Fig. 4 showing how the second layer comprising the RLC/MAC layer is mapped onto four frames of layer 1.
  - (e) The subject-matter of claims 9 and 10 is obvious for the same reasons as mentioned above in (b).

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00935

4. Apparently, the idea of the invention is to divide a GSM type time-slot in a manner using the data portion before the training sequence for one user and the data portion after the training sequence for another user. However, this idea is not expressed clearly in the independent claim.

**Re Item VII**

**Certain defects in the international application**

1. The last two lines of original page 2 is missing on the later filed page 2 of the description.

ART 34 AMDT

- 2 -

rates of up to approximately three times higher than standard GSM/GPRS/IS-136 systems.

EDGE was initially developed in order to provide data service at higher rates than GSM or GPRS, by making use of multi-phase modulation (such as 8-PSK) 5 instead of binary GMSK. However, the structure of the proposed RLC/MAC blocks for data transmission do not allow for the efficient use of the available radio resources for voice transmission. Furthermore, due to the use of 8-PSK more powerful channel coding is required in order to maintain certain levels of voice quality.

It is an object of the present invention to provide an efficient 10 transmission scheme for interleaving data from different users in the time slots of a TDMA frame, which is particularly suited to the transmission of voice in an EDGE network.

It is known from KLEIN A ET AL: "FRAMES multiple access mode 1-wideband TDMA with and without spreading", WAVES OF THE YEAR 2000+ 15 PIMRC. THE IEEE INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS, TECHNICAL PROGRAM, vol. 1, 1 January 1997 (1997-01-01), pages 37-41, XP002094062 to provide a method of transmitting user data in bursts in a TDMA system.

#### Summary of the Invention

20 The present invention is characterised over the disclosure of the Klein paper mentioned above in that at least one time-slot (TN3) carrying a single burst is partitioned into at least two sub-time-slots such that data associated with different users (608,612) is carried in the burst.

User data may be transmitted in each time slot in a burst structure having 25 n bits and wherein each time slot is partitioned into m sub time slots, user data being transmitted in each sub time-slot in a corresponding burst structure having n/m bits. The user data may comprise speech, the burst structure being a GSM burst structure.

The TDMA system may be an EDGE packet switched network.

The TDMA system may be a wireless system, wherein in the up-link 30 data from p users is encoded such that each forms 1/p of an RLC/MAC block,

ART 34 AMDT

- 45 -

## CLAIMS

1. A method of transmitting user data in bursts in time slots in TDMA frames characterised in that at least one time-slot (TN3) carrying a single burst is partitioned into at least two sub-time-slots such that data associated with different users 5 is carried in the burst.
2. The method of claim 1 in which the user data comprises speech, the burst structure being a GSM burst structure.
3. The method of any preceding claim in which the TDMA system is an EDGE packet switched network.
- 10 4. The method of any preceding claim in which the TDMA system is a wireless system, wherein in the up-link data from p users is encoded such that each forms 1/p of an RLC/MAC block, wherein the data from each user is encoded into a respective one of p sub-time-slots.
- 15 5. The method of claim 4 when dependent upon claim 3 wherein the RLC/MAC block is transmitted over four TDMA frames.
6. The method of any preceding claim wherein the user data is encoded into an RLC/MAC block for transmission, the RLC/MAC block being transmitted in a sub-time-slot over a plurality of frames.
- 20 7. The method of any preceding claim in which user data associated with at least two users is encoded into a single RLC/MAC block, the portions of the RLC/MAC block associated with respective users being transmitted in respective sub-time-slots.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 00/00935

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04B7/26 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04B H04L H04Q H04J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>KLEIN A ET AL: "FRAMES multiple access mode 1-wideband TDMA with and without spreading" WAVES OF THE YEAR 2000+ PIMRC. THE IEEE INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS. TECHNICAL PROGRAM, vol. 1, 1 January 1997 (1997-01-01), pages 37-41, XP002094062</p> <p>page 37, left-hand column, line 1-9 page 37, left-hand column, line 22,23 page 37, left-hand column, line 42 -page 38, left-hand column, line 20 page 39, left-hand column, line 46-53 page 39, right-hand column, line 1-57 figures 1,2</p> <p>—</p> <p>—/—</p>	1-3,5

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

### \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

15 May 2000

Date of mailing of the international search report

25/05/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Dejonghe, O

## INTERNATIONAL SEARCH REPORT

Inten [REDACTED] Application No  
PCT/GB 00/00935

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	NIKULA E ET AL: "HIGH BIT RATE SERVICES FOR UMTS USING WIDEBAND TDMA CARRIERS" INTERNATIONAL CONFERENCE ON UNIVERSAL PERSONAL COMMUNICATIONS, 29 September 1996 (1996-09-29), pages 562-566, XP002071479 page 563, left-hand column, line 8-28	1-3,5
X	EP 0 841 763 A (NOKIA MOBILE PHONES LTD) 13 May 1998 (1998-05-13) abstract column 3, line 52 -column 4, line 24 column 6, line 38-51 column 7, line 3-23 figure 2A	1,2
X	WO 92 17957 A (MOTOROLA INC) 15 October 1992 (1992-10-15) abstract page 5, line 19-28 page 7, line 8 -page 8, line 5 figures 2A,2B,2C	1,2
X	GARG V K ET AL: "Third generation (3G) mobile communications systems" 1999 IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS (CAT. NO.99TH8366), 1999 IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS, JAIPUR, INDIA, 17-19 FEB. 1999, pages 39-43, XP002118042 1999, Piscataway, NJ, USA, IEEE, USA ISBN: 0-7803-4912-1 page 39, right-hand column, line 20-41 page 40, left-hand column, line 22-41	3-6
X	EP 0 538 546 A (MOTOROLA INC) 28 April 1993 (1993-04-28) abstract column 5, line 6-38 figure 2	1

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00935

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0841763	A 13-05-1998	FI 964308	A	26-04-1998
		BR 9705138	A	18-05-1999
		JP 10190621	A	21-07-1998
		US 6031827	A	29-02-2000
WO 9217957	A 15-10-1992	US 5295140	A	15-03-1994
		EP 0577747	A	12-01-1994
		HU 65532	A	28-06-1994
		JP 6506579	T	21-07-1994
EP 0538546	A 28-04-1993	WO 8706082	A	08-10-1987
		AU 5589086	A	20-10-1987
		DE 3689979	D	25-08-1994
		DE 3689979	T	26-01-1995
		EP 0261112	A	30-03-1988
		EP 0412583	A	13-02-1991